

FIG. 1

Zone	Time	1st Display Msg	2nd Display Msg

FIG. 2

Time	Data Stream1	Data Stream2	Data Stream3	...	Data StreamN
Time1	Disp.Msg1011	Disp.Msg8359	Disp.Msg1011	...	Disp.Msg1011
Time2	↓	Disp.Msg4930	Disp.Msg6576	...	Disp.Msg3655
Time3	↓	Disp.Msg2948	↓	...	↓
Time4	Disp.Msg4834	Disp.Msg7483	↓	...	↓
Time5	Disp.Msg0537	Disp.Msg0486	↓	...	↓
Time6	Disp.Msg1011	Disp.Msg4875	Disp.Msg3987	...	↓
Time7	↓	Disp.Msg3645	↓	...	Disp.Msg0758
Time8	Disp.Msg1065	Disp.Msg2715	↓	...	Disp.Msg4545
Time9	↓	Disp.Msg2976	↓	...	Disp.Msg5675
Time10	↓	Disp.Msg3746	↓	...	↓
Time11	Disp.Msg8629	Disp.Msg1457	↓	...	↓
Time12	↓	Disp.Msg2847	Disp.Msg6758	...	Disp.Msg8780
Time13	↓	Disp.Msg3546	↓	...	↓
Time14	Disp.Msg0947	Disp.Msg2332	↓	...	↓
...

FIG. 8

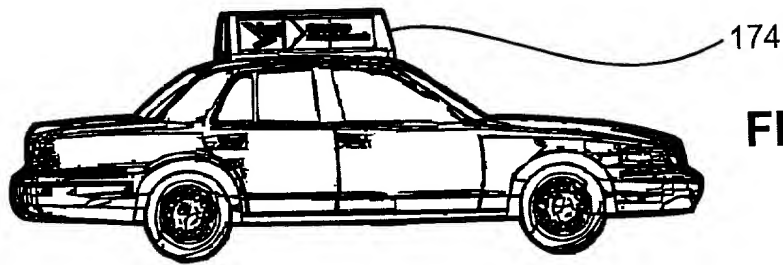


FIG. 3

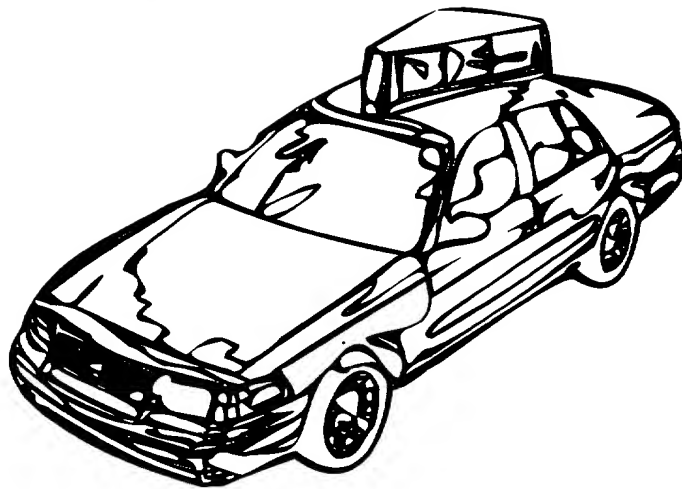


FIG. 4

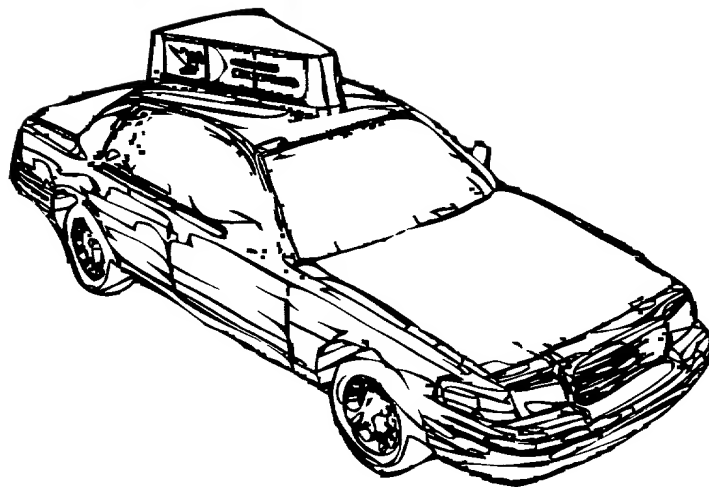


FIG. 5

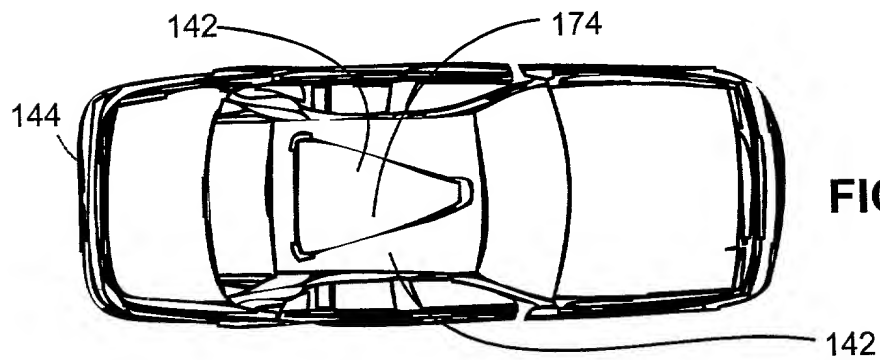


FIG. 6

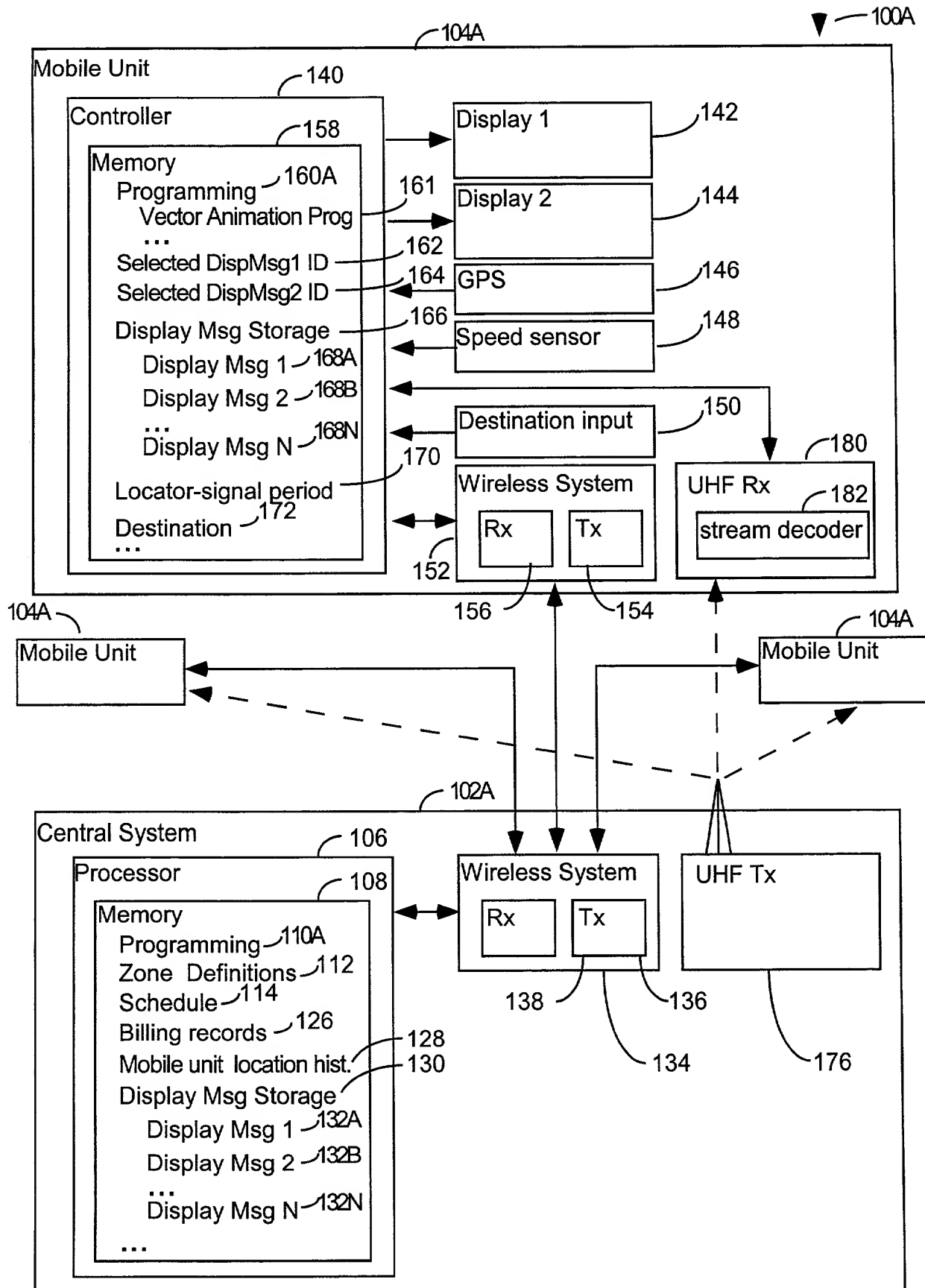


FIG. 7

-Mobile Unit's Controller Main Loop~186

-...

-If receive message from central system~188

-Read message to determine its type~190

-If message is a display-selection message~192

-For each display message identified in display-selection message~194

-If identified display message is part of display-selection message~196

-cause display message to be shown on display~198

-else if identified display message is stored in cache memory~200

-Cause identified display message's data to be read from memory and shown on identified display~202

-else if the identified display message is a message in a broadcast data stream~204

-cause the data-stream receiver to receive the identified display message~206

-cause the identified display message to be shown on the mobile unit's display in real time~208

-else send a locator signal indicating mobile unit does not have requested message~210

-if message contains a locator-signal period~212

-set mobile unit's locator-signal period to period specified in signal~214

-if message is a caching message~216

-cache display messages identified in caching message~218

-if message is a locator-signal-period message~220

-set mobile unit's locator-signal period walking were sitting to period specified in signal~222

-...

FIG. 9

-Display-selection message~224

- Header~226
- Mobile Unit ID~228
- 1st Display Message ID~230
- 2nd Display Message ID~232
- [locator-signal period]~234
- ...

FIG. 10

-Display-selection message~224A

- Header~226
- Mobile Unit ID~228
- 1st Display Message~236
- 2nd Display Message~236
- [locator-signal period]~234
- ...

FIG. 11

-locator signal~240

- header~242
- mobile unit ID~244
- GPS coordinates~246
- ID of display messages currently being shown on each display ~248
- Vehicle speed~250
- [missing selected display messages]~252
- [intended destination]~254

FIG. 12

- Mobile Unit's locator-signal daemon~260
 - if time since last transmission of a locator signal is equals locator-signal period~261
 - transmit a locator signal including~262

FIG. 13

- Mobile Unit's vehicle destination-input daemon~264
 - if vehicle destination has been entered~266
 - send a wireless locator signal to central system also informing it of the intended location~268

FIG. 14

- Mobile Unit's speed monitoring daemon~270
 - read vehicle speed generated by speed sensor~272
 - if vehicle speed or direction of mobile unit has change by more than a certain amount~274
 - vary locator-signal period accordingly~276

FIG. 15

-Central System's Locator Signal Response Programming~280

-if receive a locator signal~282

-associate a geographic location with the mobile unit which sent the signal~284

-determine which geographic zones the location is in~286

-if display messages which locator signal indicates are being shown on mobile unit are different than those in the last display-selection message sent to the mobile unit~288

-indicate difference in billing data base~290

-if the mobile unit is in a geographic zone for which different display message should be shown than those in the locator signal~292

-select the display messages to be displayed by the mobile unit based on the zone and current time~294

-send a display-selection message to the mobile unit identifying the selected display messages to be shown on the mobile unit~296

-record zone, time, and display messages associated with display-selection message in billing data base~298

-record information about the location of the mobile unit derived from its locator signal in the mobile unit location history data base~300

-if variable frequency locator signals are being used~302

-determine, from locator signal, a distance from the mobile unit to the boundary of its current geographic zone~304

-based on this distance and the speed of the vehicle, calculate the length of time before the mobile unit is likely to exit its current geographic zone~306

-based on this length of time, calculate a locator-signal period, indicating how long it should be before the given mobile unit transmits each of one or more subsequent locator signal~308

-send a wireless locator-signal-period message to the given mobile unit containing said locator-signal period~310

-if locator signal includes intended destination~312

-select a subset of a larger set of display messages which are to be cached by storage in the memory of a given mobile unit as a function of one or more of said geographic locations which have been associated with the given mobile unit and of intended location~314

-send a wireless caching message to the given mobile unit informing the given mobile unit to cache the selected subset of display messages~316

-...

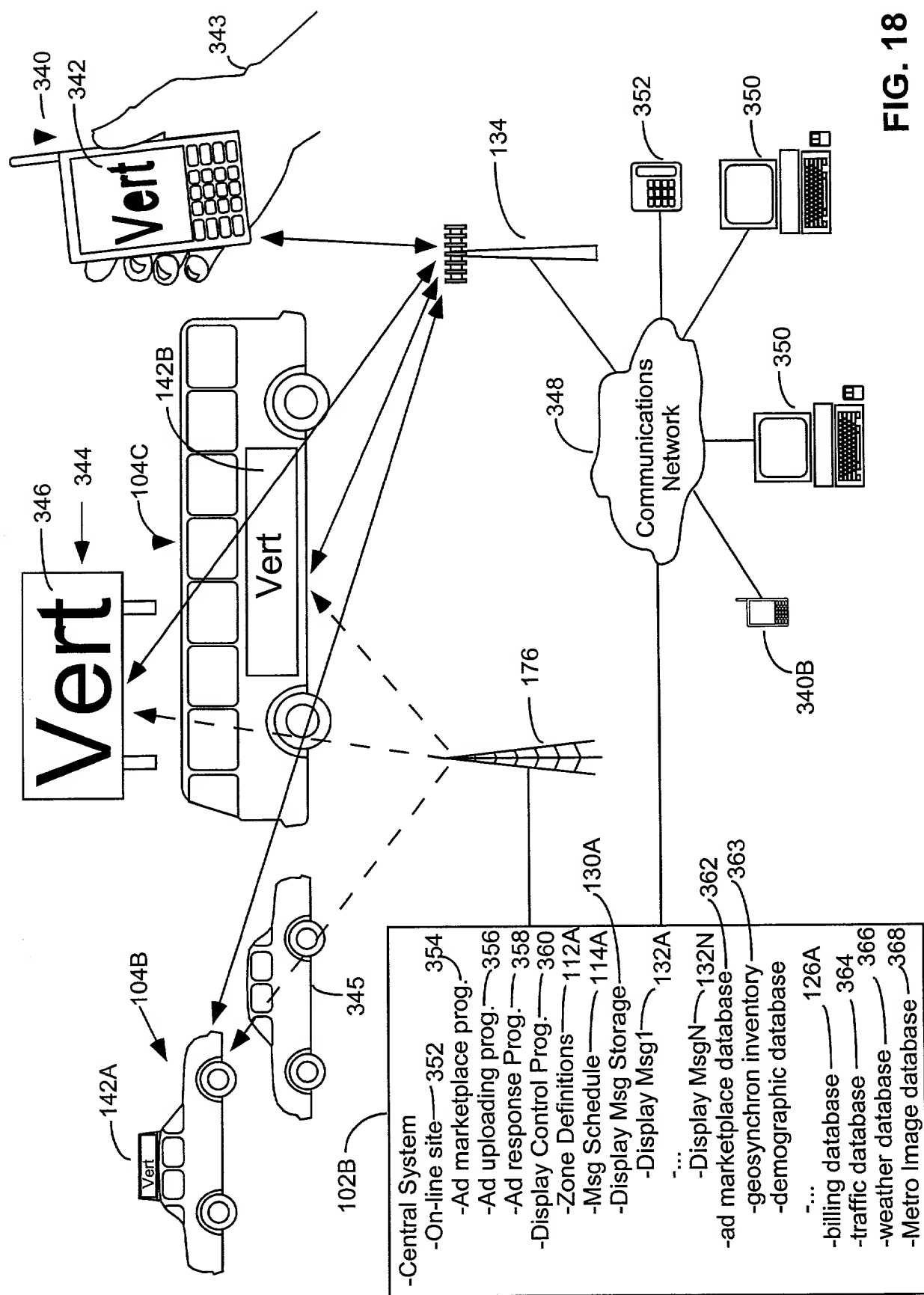
FIG. 16

- Central System's Bill generation Programming~320
 - based on the billing records, create bills for individual advertising clients with the amount of each such bill being a function of the number and length of displays of their display messages, and the time and zones in which such displays were made~322

FIG. 17

- Central System's On-Line Site programming~420
 - provide downloadable point and click interface allowing a user to:~422
 - obtain content explaining:~424
 - system's features~426
 - how to purchase advertising on system~428
 - how to respond to advertisements on system~430
 - system's contests and promotions~432
 - use geosynchron selling interface to:~1152
 - examine geosynchrons by time-location map~1154
 - search for geosynchrons by criteria~1156
 - select or deselect one or more geosynchrons shown in map or search results~1158
 - add or subtract selected geosynchrons from a selected group~1160
 - select, add, or subtract geosynchron groups~1162
 - purchase or bid for selected geosynchrons~1164
 - if select auto-placement~1166
 - select criteria for automatic display of messages by system~1168
 - upload advertisement message~1170
 - including text, bitmapped, bitmapped-animations, vector-based animation, and real-time feed~1172
 - select or reselect uploaded message to be shown in purch.ased geosynchron~1174
 - sell or resell geosynchrons~1176
 - track showing of messages in purchased geosynchrons~1178
 - track showing of auto-placement messages~1180
 - bill customers for display of advertisements at prices associated with the time and place of their showing~1181
- see traffic information collected from mobile units, with ability to see traffic information for given locations and at given times~438
- see weather information collected from mobile units, with ability to see information for given location and time~440
- navigate 3D image of city, by location and time~441
- select to have directions using 3D images to give visual directions~442
- see current images from cameras on local units~443
- upload content for non-commercial display on mobile units~444
- ...

FIG. 23



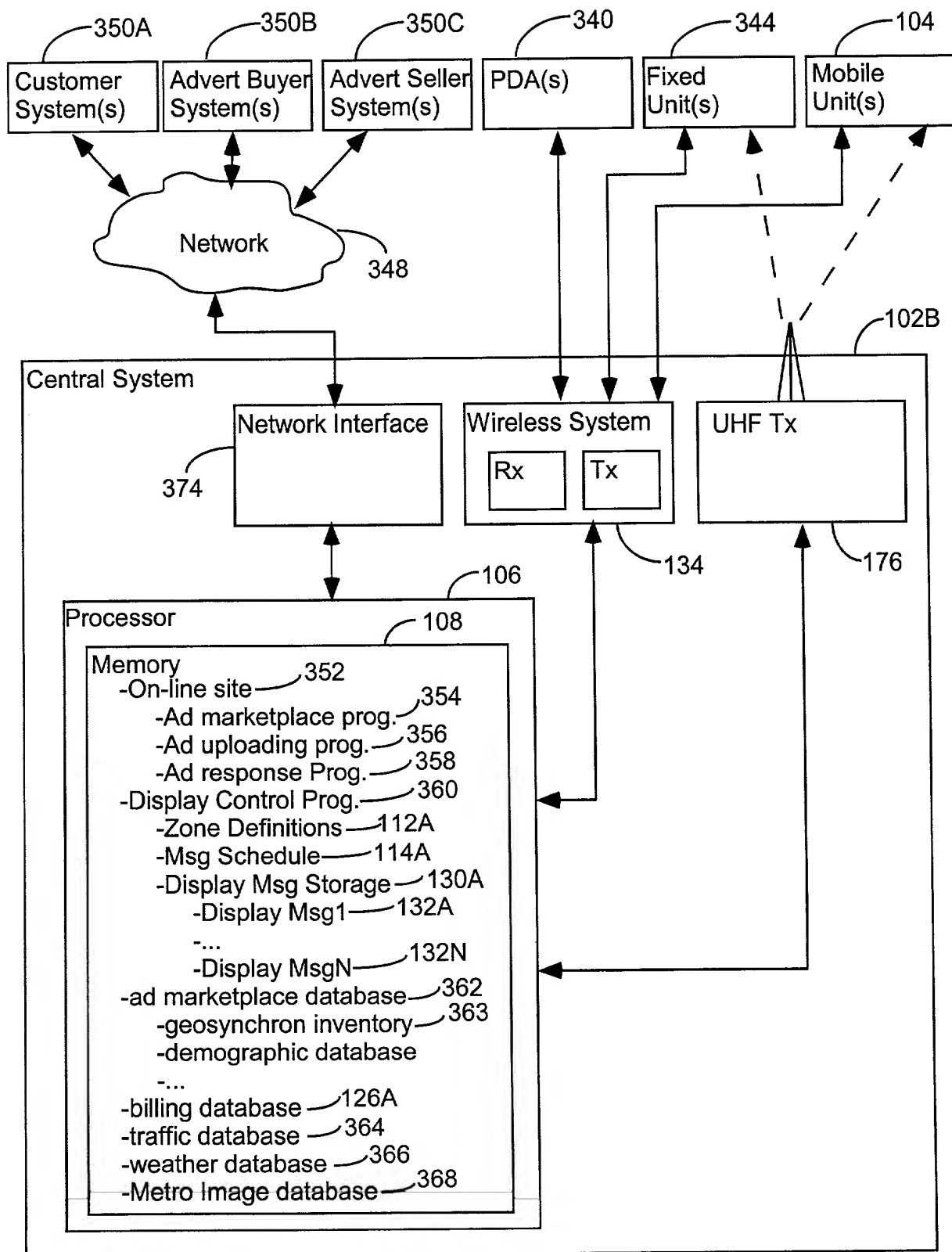


FIG. 19

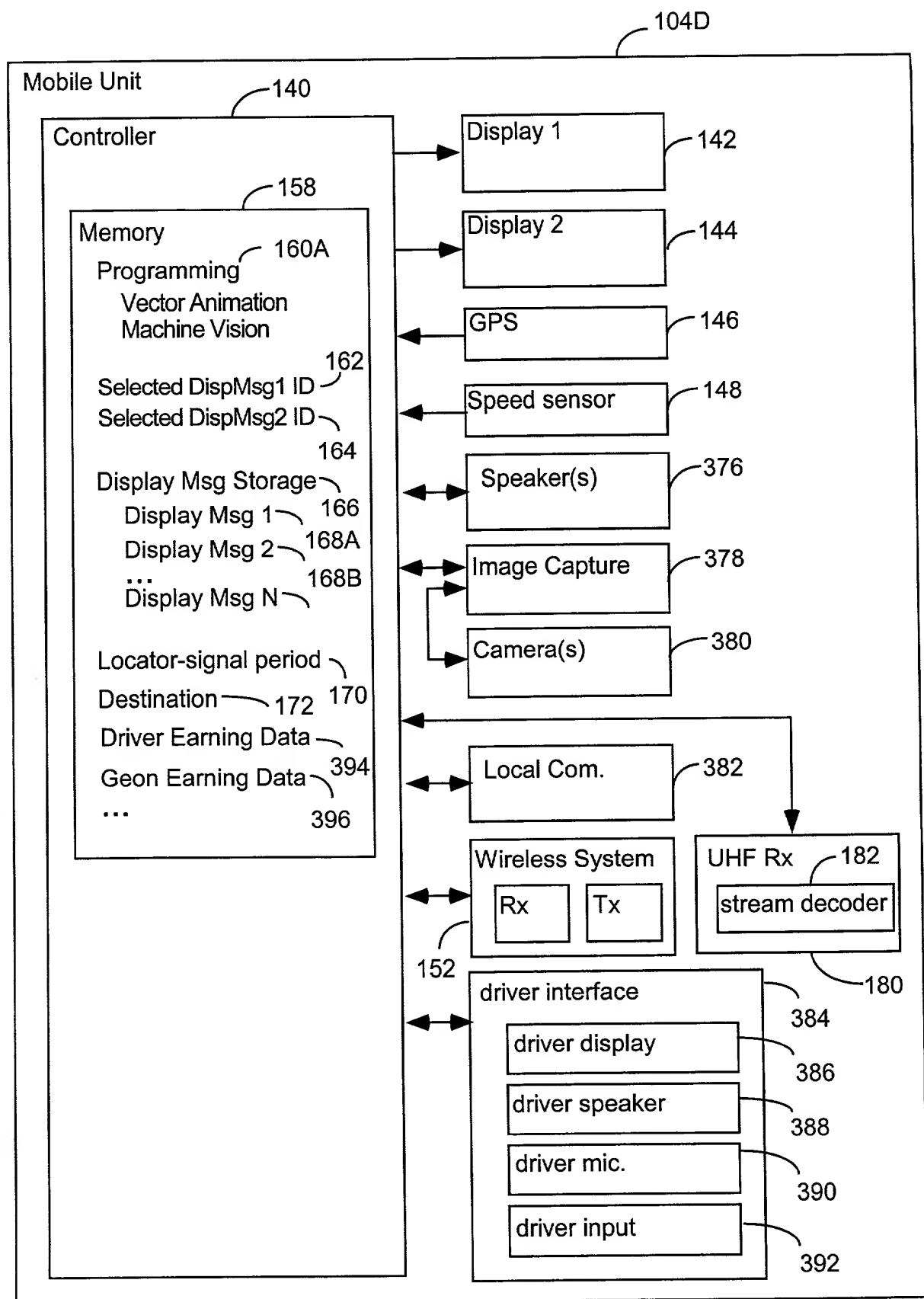


FIG. 20

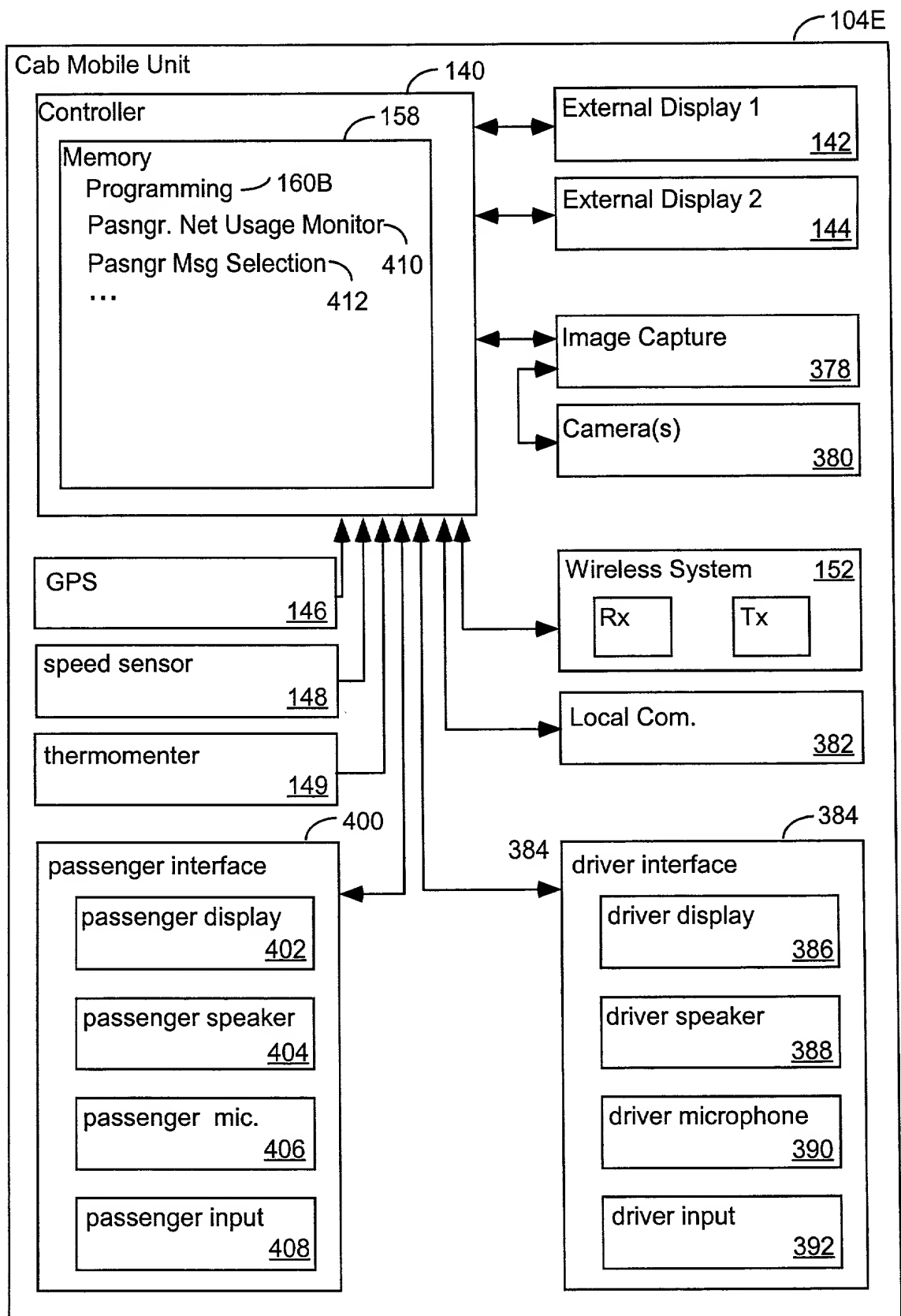


FIG. 21

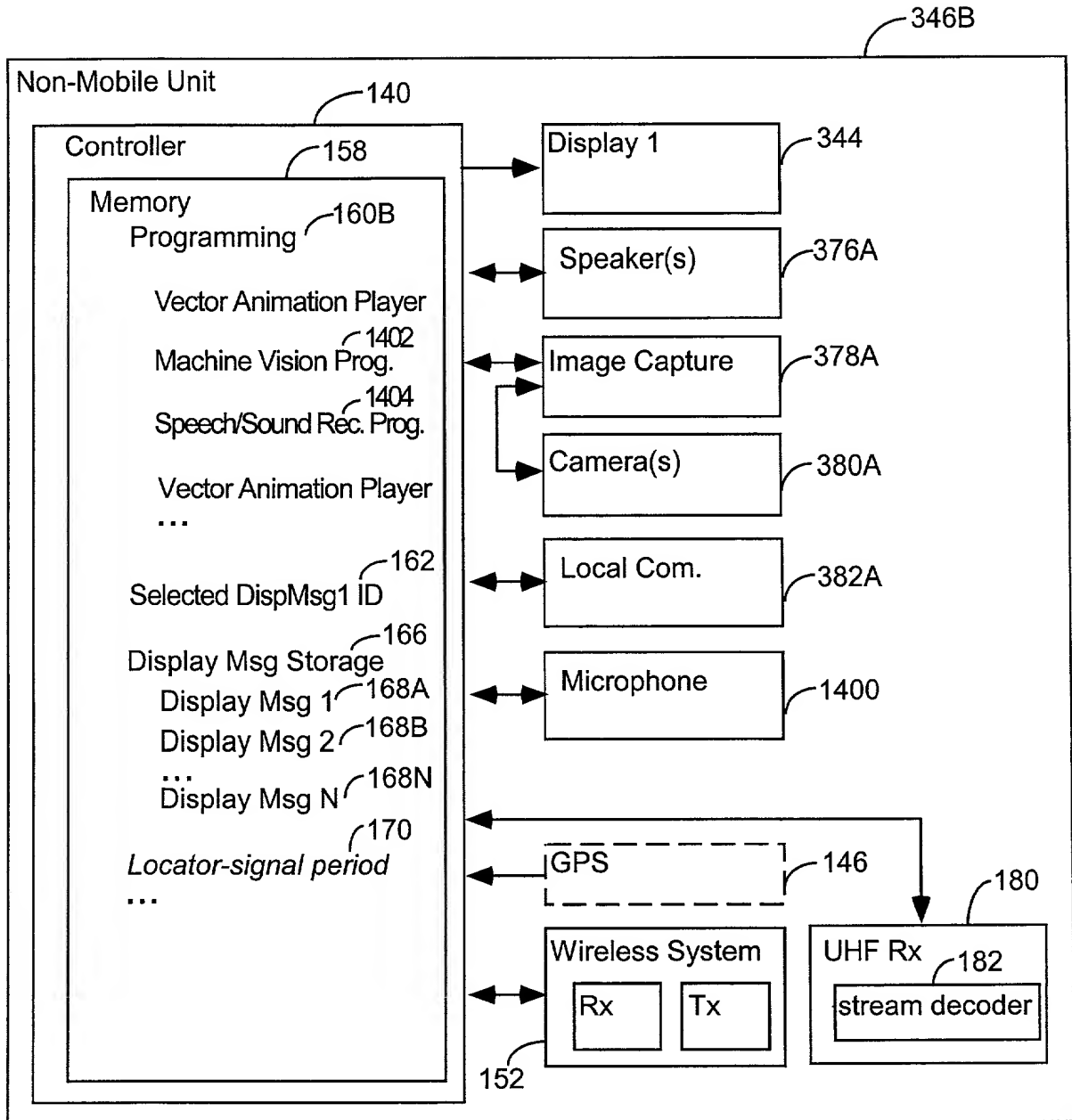


FIG. 22

-Central System Geosynchron Selling Programming~446

-...

- if user selects a particular display of geosynchrons~448
 - generate and show a specified display of a set of geosynchron ~450
- if user click on a geosynchron~1182
 - select geosynchron~1184
- if user selects a geosynchron selection criteria~452
 - search for and generate a ranked list display or map display of geosynchrons matching or best matching the criteria~454
- if user selects auto-placement criteria~456
 - system automatically shows messages at certain times and places as function of customer selected criteria~458
- if user selects auto-bidding criteria~1186
 - system automatically places bids on geosynchrons based on customer selected auto-bidding criteria~1188
- if user selects to estimate price of a selected geosynchron set~460
 - display distribution of probable prices for set based on price (fixed or currently bid) and past message display patterns~462
- if user selects to place geosynchron which it owns for resale~464
 - provide user with an interface allowing it to identify its AdvertiserID, the GeosynchronOwnershipID for sale, the asked price, if fixed price sale; and the starting bid, minimum price, and closing time, if auction~466
 - if receive proper re-sale information from user~468
 - record offer, and place geosynchron in system's inventory~470
- if user selects to place geosynchrons for sale for the first time~471
 - provide user with an interface which allows it to enter information defining the geosynchron and the term under which it is for sale~472
 - if receive proper sale information from user~473
 - record offer, and place geosynchron in the system's inventory~474

FIG. 24A

- if user selects to purchase a fixed price ad~475
 - if purchase is authorized~476
 - record advertiser's purchase in billing records~477
 - send advertiser a GeosynchronOwnershipID entitling it to associate ad with geosynchron in schedule~478
- if user or auto-bid programming selects to bid on auctioned ad~479
 - If bid is higher than current highest bid~480
 - place bid and advertiserID in database for geosynchron~482
 - return indication whether bid was successful~484
- If user requests to see current bid on auctioned geosynchron~486
 - display it~488
- if time for closing bidding on one or more geosynchrons is up~490
 - for each geosynchron whose bidding has just closed~492
 - declare highest qualified bidder the winner, and record winning price for the geosynchron~494
 - send winner a msg informing it that it has won geosynchron which includes a GeosynchronOwnershipID~496
- Associate a fixed price with each fixed price geosynchron offered for sale based on~498
 - auction prices for comparable geosynchron~500
 - percent of similar geosynchrons which have sold at various prices~502
 - demographics, display traffic, viewer traffic, auction prices, click-throughs on website, time, and other relevant attributes of the geosynchron~504
 - human set prices~506

FIG. 24B

- geosynchron display interface~508
 - provide controls enabling user to select~510
 - ad display device type~512
 - including fixed location; taxi displays; bus displays; PDA displays; location of display on vehicle (e.g., side or back) ...~514
 - sale type~516
 - including auctioned ads; fixed price ads: ...~518
 - ad type~520
 - including whole geosynchrons; geosynchron time slices; personal announcements; display-time-limited geosynchrons, unused time geosynchrons, secondary market geosynchrons; sponsorships geosynchrons; ...~522
 - time~524
 - location~526
 - geosynchron color scheme~528
 - including:~530
 - demographic info~532
 - mobile unit traffic~534
 - price ~536
 - buys made by one or more other advertiser~538
 - degree of match with criteria selected by customer with geosynchron selection interface~540
 - any other criteria useable in geosynchron selection interface~542
 - whether geosynchron is selected, non-selected in one or more geosynchron groups~548
 - geosynchron display scheme~550
 - including map and scale of map or text list~552
 - to open, edit, or save a geosynchron set~554
 - if user selects to show geosynchrons with current settings~556
 - generate geosynchron display according to selected settings~558
 - if user select a geosynchron shown in such a geosynchron display~560
 - use can choose to do the following to selected geosynchron~562
 - to deselect it~564
 - to see demographic info on geosynchron~566
 - to see images from mobile unit cameras recorded during corresponding geosynchrons in past~568
 - to see data extracted from cameras on mobile units during corresponding geosynchrons in past~570
 - to buy or bid on it~572
 - if currently owns selected geosynchron, to off it for re-sale~574
 - if the geosynchron is an expired geosynchron owned by the user~576
 - can select to to see actual images recorded during display of user's own advertisement, if available~578
 - can select to see statistics about audience during display of ad, if available~580

FIG. 25

- geosynchron selection interface~582
 - provide controls enable user to make one or more weighted selections from each of following criteria (i.e., parameters):~584
 - ad display device type~586
 - including fixed location, taxi, bus, PDA, location of display on vehicle (e.g., side or back) ...~588
 - sale type~590
 - including auctioned ads; fixed price ads: ...~592
 - ad type, including~594
 - including whole geosynchrons; geosynchron time slices; personal announcements; unused time, secondary market; sponsorships of programming such as news, time, weather, traffic, contests; ...~596
 - time profile~614
 - including time of day, day of week, work days, weekends, holidays, rush hours, nearness in time to events,
 - location profile~616
 - including~618
 - nearness to Residential, Entertainment, Universities, Parks, Government Buildings, Tunnels, Bridges, Business Districts, Tourist Areas, Art Galleries, Restaurants, Movie Theatres, 24 hour stores, Toll Booths, High Traffic Areas, Airports, Taxi Stands, subway stop, types of store, named businesses,... ~620
 - City, town, Geon list~622
 - demographic profile~600
 - including~602
 - population, including age, education, income, education, language, ethnic group, behavioral or psychological characteristic, and sex of population, if available~604
 - audience, including number, age, education, income, education, size, sex, distance and orientation relative to display, type of car, time to watch display, and current activity of audience, if available~606
 - household value~608
 - retail sales~610
 - number of employees~612

FIG. 26A

- price profile~624
 - including least/most expensive n%; under/over running average for region; less/greater than \$n; least/most price fluctuation;...~626
 - total price limit~627
- event profile~628
 - including by named event, by event type~630
- ad purchaser~632
 - including by name; by business; by size; by location; by advertiserID (including a user's own id)~634
- geosynchron sets~636
 - including a set or one or more geons or geosynchrone~638
- enable user to select:~640
 - run exact match or best match~641
 - to run matching programming that generates and displays a geosynchron set from current parameter set~642
 - to name and save a geosynchron set~644
 - to open or save a geosynchron selection parameter set~646
 - to remove geosynchrone for a geosynchron set~648
 - to add or subtract geosynchron sets ~650

FIG. 26B

- Optimization Programming~652
 - Define multidimensional space as function of customer selected criteria and customer selected weights associated with those criteria respectively~653
 - find distance between one or more points in that space representing values of customer selected criteria and one or more points represented by each of a plurality of geosynchrone is indicated by criteria values associated with those geosynchrone in demographic and/or other databases~654
 - select a set of one or more best scoring geosynchrone which comply with the price limit, if any, selected by the customer~655

FIG. 27

-Central System Public Ad Selling API ~674

- ...
- selectGeosynchs (AdvertiserID, AdDisplayType, SaleType, AdType, DemographicProfile, TimeProfile, LocationProfile, PriceProfile, EventProfile, AdPurchaser, StartingGeosynchronSet)~675
- bidForGeosynchron (AdvertiserID, GeosynchronID, Price);~676
- showCurrentGeosynchronBid (AdvertiserID, GeosynchronID)~677
- uploadAd(AdvertiserID, AdURL)~678
- pickAdForGeosynchron (AdvertiserID, AdID, GeosynchronOwnershipID);~679
- getGeonForCensusBlock (AdvertiserID, CensusBlockNumber);~680
- getGeonForCoordinates (AdvertiserID, Longitude, Latitude)~681
- getGeonForAddress (AdvertiserID, StreetAdr1, StreetAdr2, City, State, Zip)~682
- getGeosynchronForGeon(AdvertiserID, GeonID, Time)~683
- getInfoOnGeosynchron(AdvertiserID, GeosynchronID, TimeSpec, infoForm)~684
- getInfoOnGeon (advertiserID, geonID, infoForm)~685
- getAccountInfo (AdvertiserID, AccountID, InfoForm)~686
- resellGeosynchron (AdvertiserID, GeosynchronOwnershipID, FixedPrice, MinPrice, Deadline)~687
- getGeosynchronDisplayInfo (AdvertiserID, GeosynchronOwnershipID, infoForm)~688
- ...

FIG. 28

-Central System Personal Message Selling Programming~694

- ...
- if user selects to purchase a personal Message~695
 - provide interface allowing user to either upload a message or select, compose, and/or edit a personal message~696
 - provide interface allowing user to see information, such as price, demographics, and audience, associated with various personal announcement geosynchs~697
 - provide interface allowing user to see location and destination of display units near a given location which have personal announcement geosynchron availability~698
 - provide interface allowing a user to purchase the geosynchron in which the message is to be displayed~699
 - displayed at a selected fixed location, time, and duration~700
 - displayed automatically upon proximity to particular wireless device~701
 - displayed at an exact time and location triggered by user command, such as by web, phone, i-phone, or PDA~702
 - provide interface for billing user for a personal message~703
- ...

FIG. 29

- Central System's Ad Response Programming~705
 - if receive a wireless data, wireless phone, landline phone, internet, or local communication device message~706
 - down
 - ad response msg specifying time and location of ad interested in~718
 - record time and location selection~719
 - send client msg with identification and link to ads shown near the location and time, and standard ad response interface~720
 - ad selection msg~721
 - record selection~722
 - respond by transmitting currently displayed message's associated user response, which can include~762
 - additional information about message or its advertiser~764
 - instant messaging message~766
 - electronic coupon~768
 - map to advertiser's nearest store~772
 - link to advertiser's web site~774
 - phone connection to advertiser~775
 - audio to accompany message~776
 - selectable list of such options~778
 - link to other aspects of central system's site~780
 - coupon redemption msg from a merchant~725
 - record merchant, coupon ID, time~726
 - "show me" request~746
 - if have location of requestor and if schedule allows~748
 - show image of location of requesting device~750
 - request to show a personal announcement with ownershipID~752
 - display personal msg on mobile unit closest to him or her~754
 - record that display has been made for accounting purposes~756

FIG. 30

- Central System's Locator Signal Response Programming~280A
 - ...
 - obtain information from wireless network about identity, number, and/or closeness, of wireless units near mobile unit~790
 - if the mobile unit is in a geographic zone for which different display message should be shown than those in the locator signal, or if the identity, number, and/or closeness of wireless units near the mobile unit indicates that a different message should be shown~292A
 - select the display messages to be displayed by the mobile unit based on the zone, current time, and identity, number, and closeness of wireless units identified in area~294A
 - ...

FIG. 31

-Central System's Locator Signal Response Programming~280B

-...

-obtain information about speed of vehicle~792

-if the mobile unit is in a geographic zone for which different display message should be shown than those in the locator signal, or if the speed of the mobile unit indicates that a different message should be shown~292B

-select the display messages to be displayed by the mobile unit based on the zone, current time, and speed of vehicle, with possible changes in rate of motion in message, or length of message as a function of speed~294B

-...

FIG. 32

-Mobile Unit Camera Programming~794

- upload images~796
- use comparison with 3d model to help more clearly recognize cars and people (which are not part of permanent 3D model)~798
- if receive message that PDA in mobile units location has sent a "show me" request~799
 - show picture of location of PDA~800
- if receive message from central system to photograph a given location from a given angle and zoom setting~802
 - do so~804
- if specific conditions are met~806
 - show image recorded by camera on display screen~808
- compare 2d images and location indications against 2d projections from 3d model of city to confirm exact location, and provide output to mobile units location detecting system~810
- use vision recognition to extract image information including the following from vehicle's camera images~1200
 - estimates of audience information including number, type, distance, relative speed, and activity of any people in view associated with each display, as well as the make, model, and year and relative speed of any vehicles in such views~1202
 - estimates of traffic information based on number, speed, and relative speed of vehicles ~1204
 - estimates of weather characteristics~1206
- upload extracted image information ~1208
- if auto-placement is in use,~1210
 - use audience, traffic, or weather information extracted from images to select which display message to show as a function of customer selected criteria~1212

FIG. 33

- Central System Camera Programming~812
 - record images and/or image information unloaded from mobile unit in association with location and time of recording~814
 - use 2D to 3D software to create 3D model of portion of city being imaged, removing moving objects, updating image for changes~816
 - record image information defining audience characteristics received from display units in demographic database, performing machine recognition if not already performed by display units~818
 - record image information defining type, absolute speed, and relative speed of vehicles and other traffic conditions and record them in traffic database for time and location, performing machine recognition if not already performed by display units~820
 - record image information defining weather conditions and record them in weather data base for time and location, performing machine recognition if not already performed by display units~822
 - use visual recognition to vary messages shown by mobile unit's external display~823
 - based on ~824
 - estimation of number of people who can see display~826
 - estimation of speed of vehicle or nearby vehicles~828
 - estimation of age, sex, race, social class of people around display~830
 - estimation of weather~832
 - lighting conditions~834
 - ...
 - use visual recognition to detect behavior of person relative to display and respond to behaviors which indicate recognition or attention toward display by~838
 - giving reward to person, if they identify themselves~840
 - showing picture of person~842
 - recording the users sign of recognition for statistical purposes~843
 - ...
 - respond to inputs from users of the system for given images to be taken in given locations by instructing mobile unit in that location to take given images, including angle and zoom of image~844
 - ...

FIG. 34

- Central Systems Synchronized Displays Programming~846
 - ...
 - if current location of two display units are close enough to be seen by same people~848
 - instruct the close displays to show a msg in synchronism~850
 - if msg is designed for simple synchronization~852
 - show same msg on the close displays in synchronism~854
 - if msg is designed for ping-ponging~856
 - ping-pong the msg on the close displays in synchronism~858
 - ...

FIG. 35

- Central Systems Location Varying Message Programming~860
 - if current location of a mobile display units is close enough to a specific location~862
 - instruct the display to show a location varying message for the specific location~864

FIG. 36

- Mobile Unit's Location Varying Message Programming~866
 - ...
 - if receive instruction from central system to display a given location varying message~867
 - start displaying the message~868
 - until end of message's display~867
 - mobile unit obtains information on its current locations as it moves during the animation~870
 - mobile unit varies display of successive images in message in response to changes in location~872
 - ...

FIG. 37

- Cab Mobile Unit Programming~874
 - if new destination is input on driver input~875
 - indicate new destination on driver (and perhaps external) display~876
 - transmit new destination to central system~877
 - if a new status is input on the driver input~878
 - indicate change in status on driver (and perhaps central) display~879
 - transmit status change to central system~890
 - if a fare is being earned~891
 - display fare information on drivers (and passengers) display~892
 - transmit information about fare to central system~893
 - if driver signals a given emergency type~894
 - depending on emergency type: ~896
 - send message to central system and police indicating, vehicles ID, Driver Name, and type of emergency~898
 - turn on an audio listening device and record and/or broadcast audio and images from camera to central system ~900
 - have external displays show a message appropriate for emergency type~902

FIG. 38

- Cab Central System Programming~904
 - if receive information on location of a cab~906
 - record it in cab database in association with cab ID and time~908
 - update cab location display to show new address~910
 - if receive information on new destination for a cab~912
 - record new destination in association with cab ID and time~914
 - calculate one or more best route to destination (considering factors such as cab's current location, time, current traffic info, historical traffic info for time, advertising demand in various locations, and cost)~916
 - transmit one or more best routes with calculated time, cost, and earnings to cab for display on driver's display~918
 - if receive information on change in cab status~920
 - record it in association with cab ID and time~921
 - if receive information about cab fare~922
 - record it in association with cab ID and time~923
 - aggregate from cab database info on~924
 - productivity of individual drivers~926
 - productivity of various locations~928
 - traffic flows rates at given locations and given repeated times~930
 - cab availability~932
 - calculate information about best places for cabs to wait for passengers~934
 - based on number of pick-ups at various locations at various times in the past~936
 - based on info recently entered into system by cab~938
 - if driver requests info on where to wait for pick-ups, given its current location~940
 - calculate information on best place for cab to wait for a pick-up given current location~942
 - send information to driver~944
 - if receive request to view cabs in a given location~946
 - send out page showing current location of cab from cab database~948
 - if receive request for estimate for how long it would take a free cab to reach a given location to pick some one up~950
 - calculate estimate based on location of free cabs or cabs that are about to come free, location of requested pick-up, current traffic information, weather, and historical traffic information for locations involved~952
 - send estimate to user~954
 - if receive request for estimate of how long it would take to get from one location to another at a given time~956
 - calculate estimate of how long trip would take based current traffic information, weather, and historical traffic information for locations involved~958
 - send estimate to user~960
 - if receive request to see historical information on how long it takes to go from one location to another by cab~962
 - send out page enabling a user to obtain historical information from cab database on the length of time for similar trips in past at various selectable times and weather conditions~964

FIG. 39A

- if receive request for pick up at a first location for a trip to a second location as soon as possible~966
 - determine if any free cabs from cab data base~968
 - calculate likely time to reach first location~970
 - calculate likely time of trip from first to second location~972
 - send user information on time calculations, and ask if wants to book trip~974
 - if so~976
 - inform driver of expected fare and confirm if he or she can take it~978
 - if driver confirms can take fare~980
 - send message to cab, to change its status display to ~982
 - send passenger message that cab will be book, with booking url from which can find status of cab~984
- if receive request to find status of booked cab~986
 - query cab database to find location of booked cap~988
 - estimate time for cab to get from current location to pick-up location,~990
 - send requestor a map showing both booked pick-up location and location and speed of booked cab, and estimated time of arrival time, and send to user~992

FIG. 39B

- Traffic Information System~994
 - multiple mobile units, each with an external display, report on location and speed at successive points in time~996
 - central system records vehicle position, time, and speed~998
 - central system calculates speed of traffic flows at various locations from this information and other information if available~1000
 - central system transmits information about traffic flow to mobile units~1002
 - mobile units display information about traffic flows at multiple locations derived from multiple mobile units on external displays, selecting on which locations to show which traffic information as function of mobile units location ~1003

FIG. 40

- Weather Information System~1004
 - multiple mobile units, each with an external display, report on weather at their location at successive points in time~1006
 - central system records vehicle position, time, and the weather information it is reporting~1008
 - central system calculates weather information at various locations from this information and other information if available~1010
 - central system transmits information about weather to mobile units~1012
 - mobile units display information about weather at multiple locations derived from multiple mobile units on external displays ~1014

FIG. 41

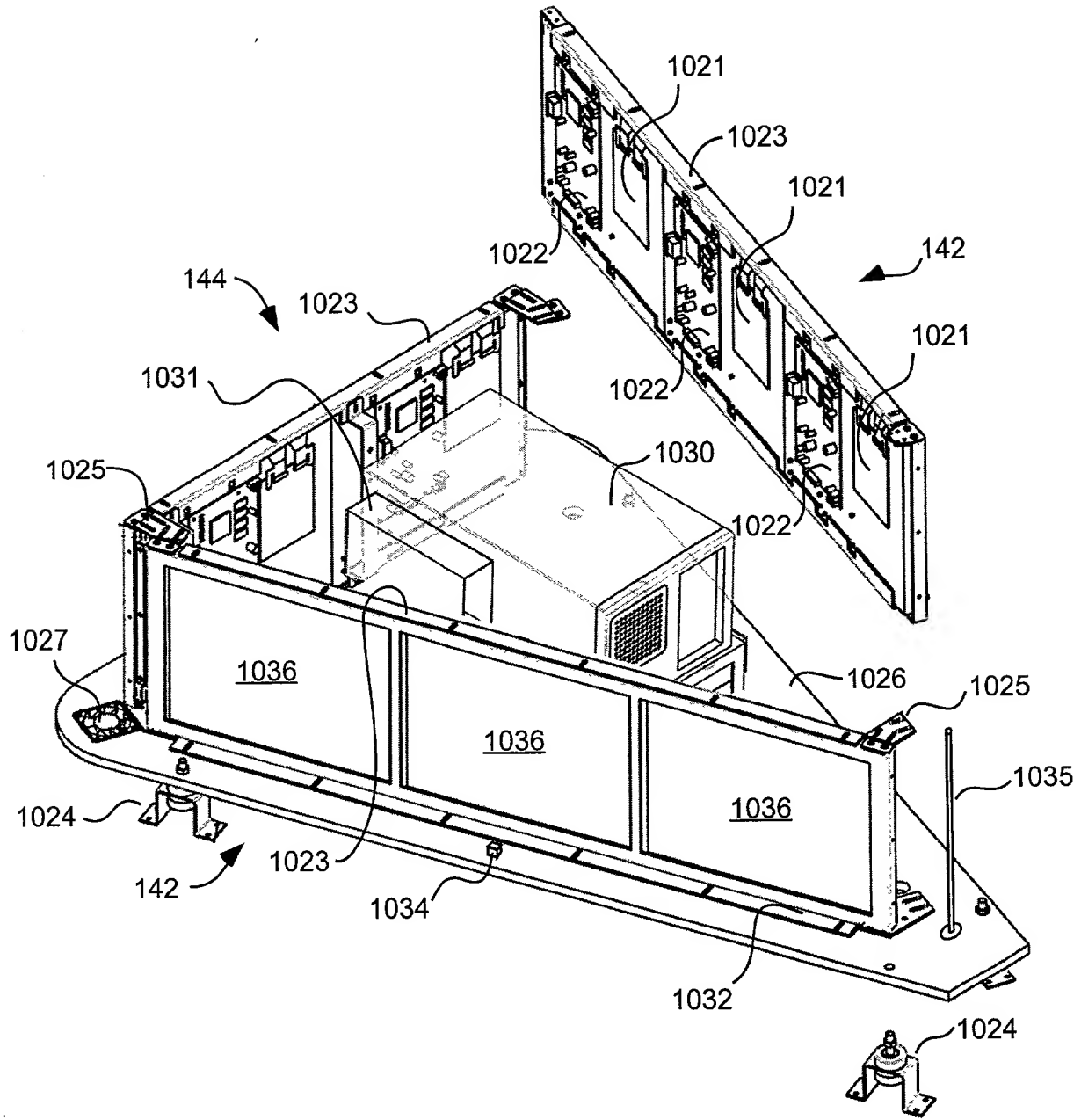


FIG. 42

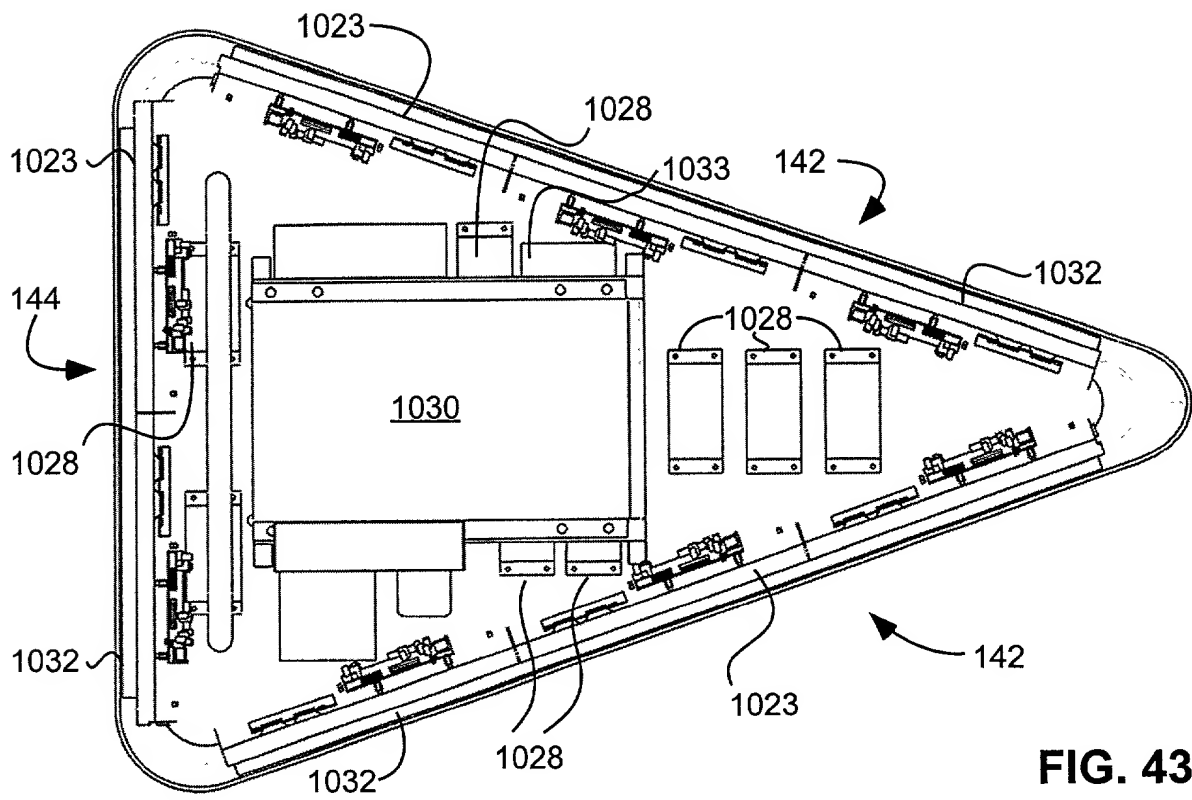


FIG. 43

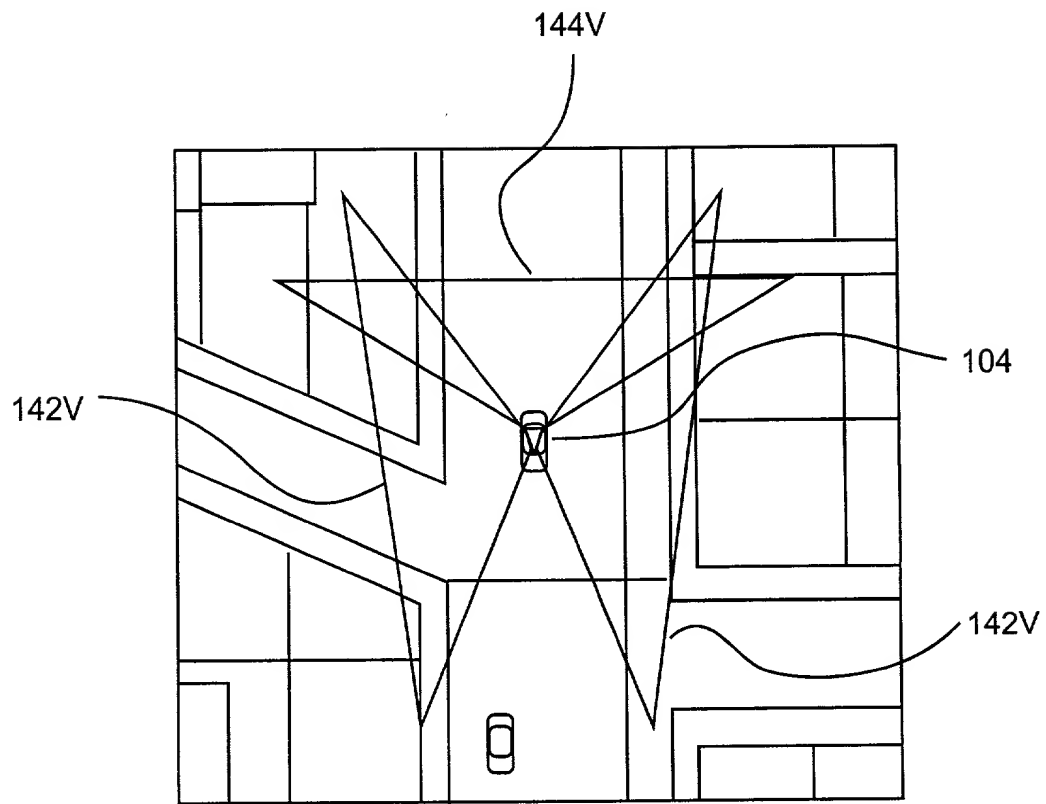


FIG. 44

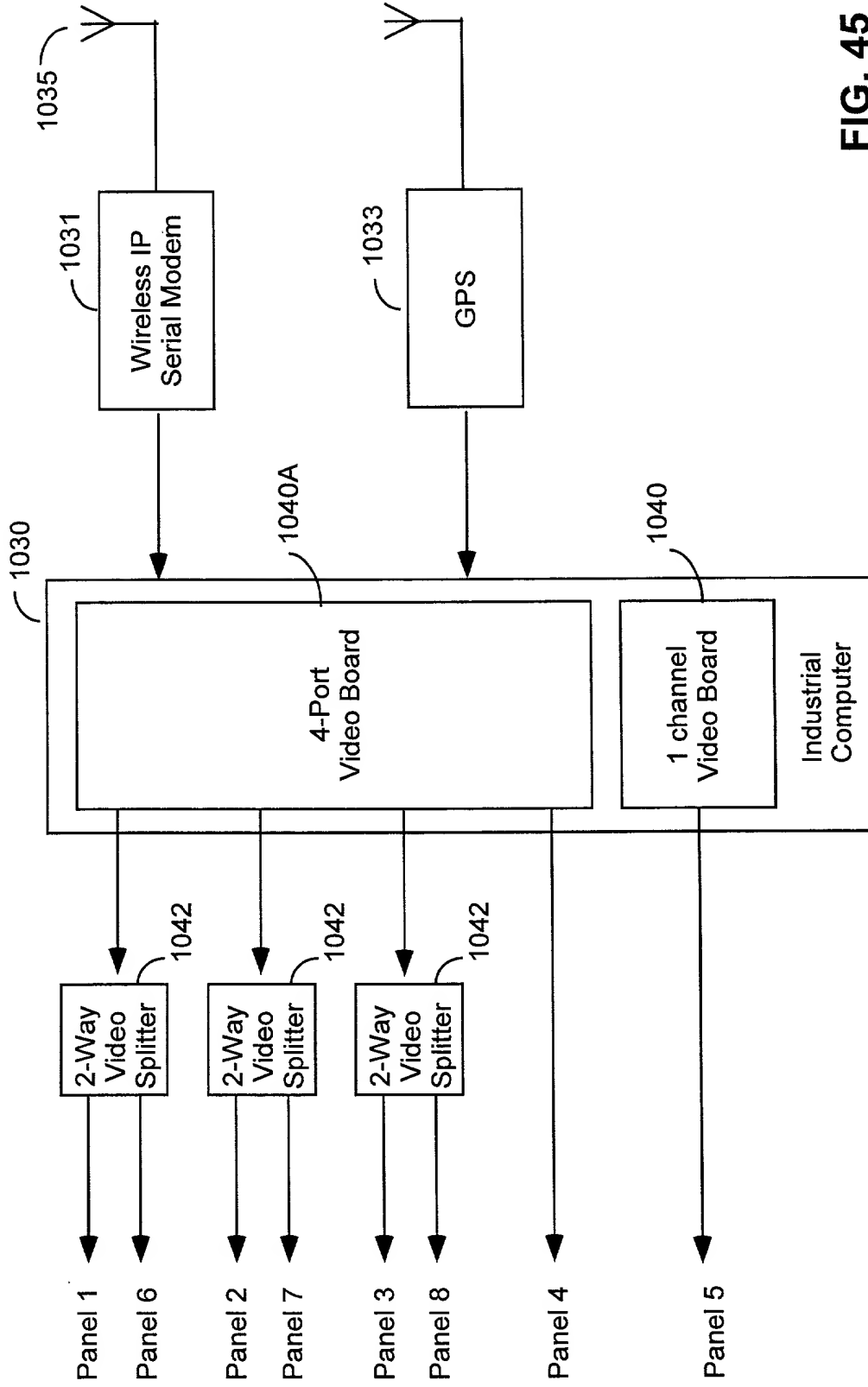


FIG. 45

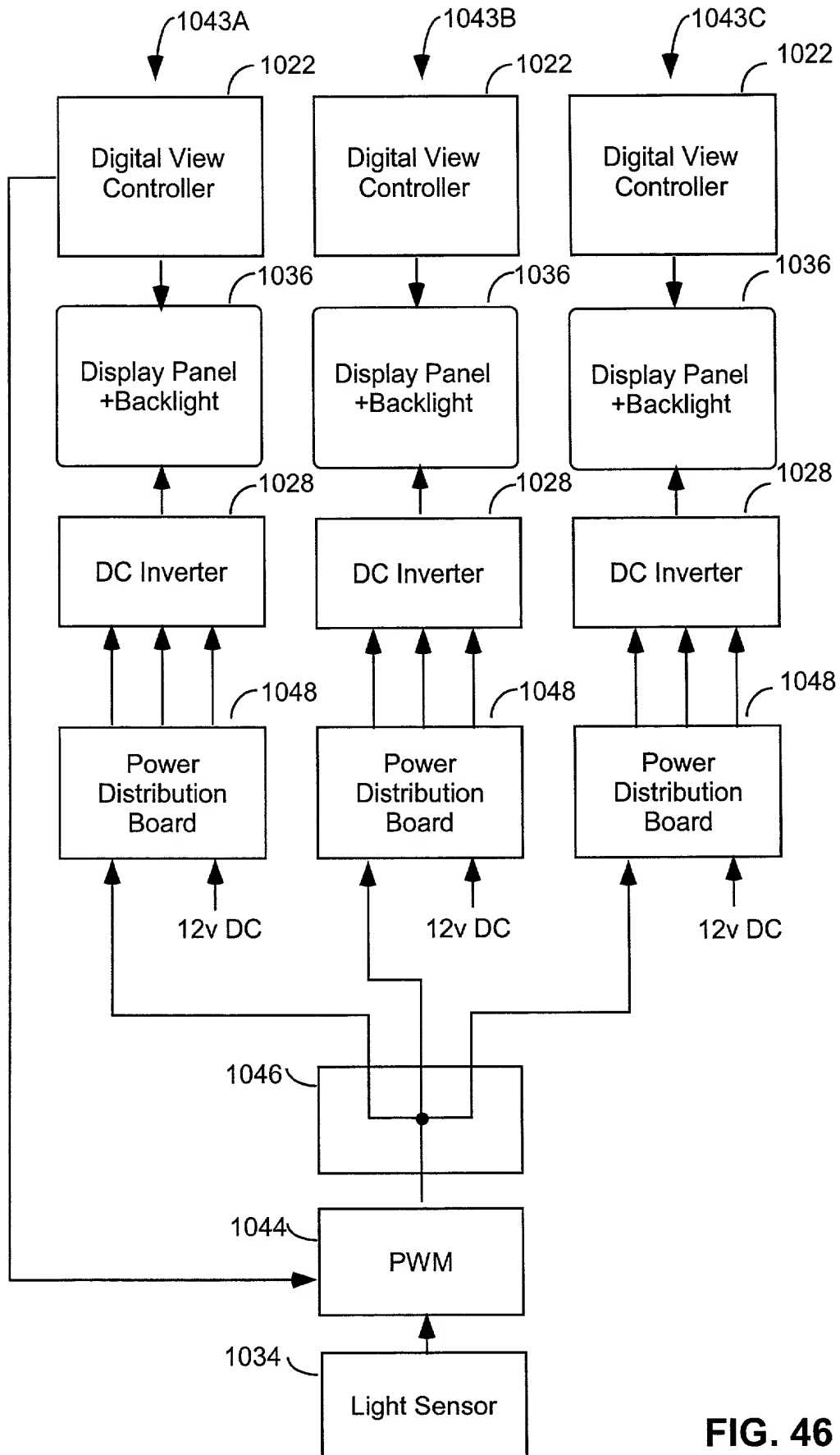


FIG. 46

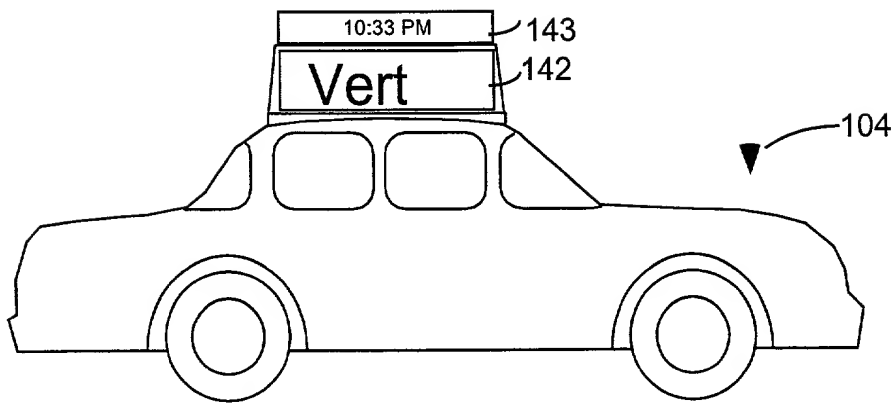


FIG. 47

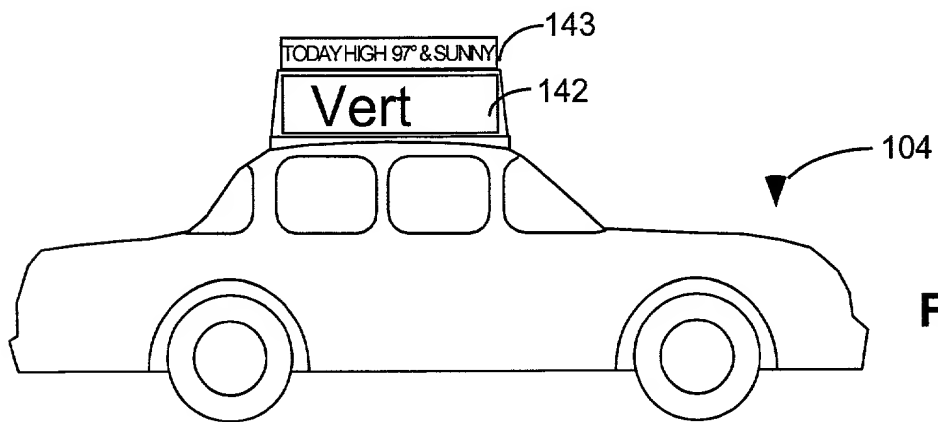


FIG. 48

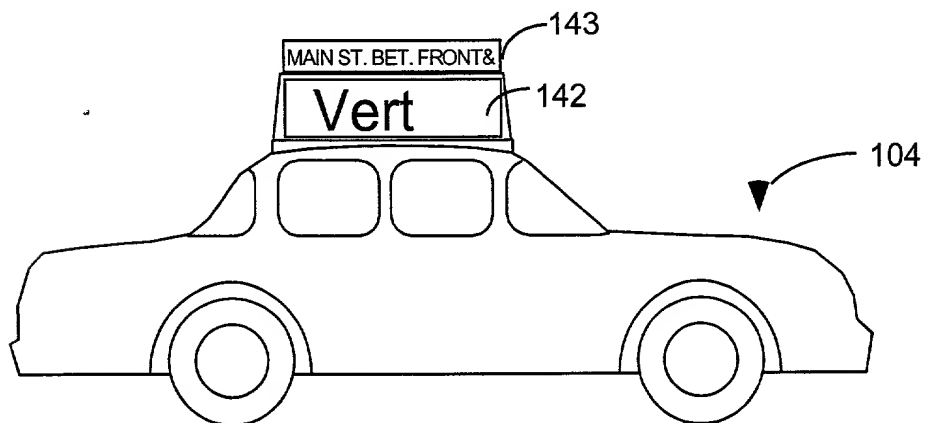


FIG. 49

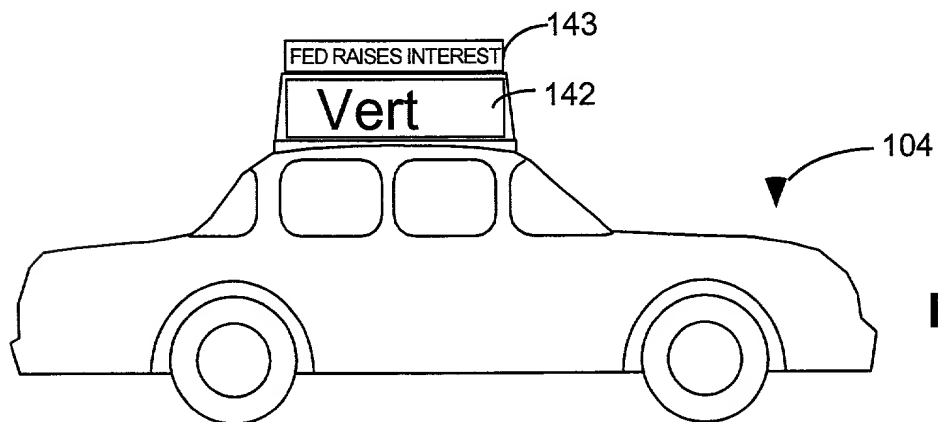
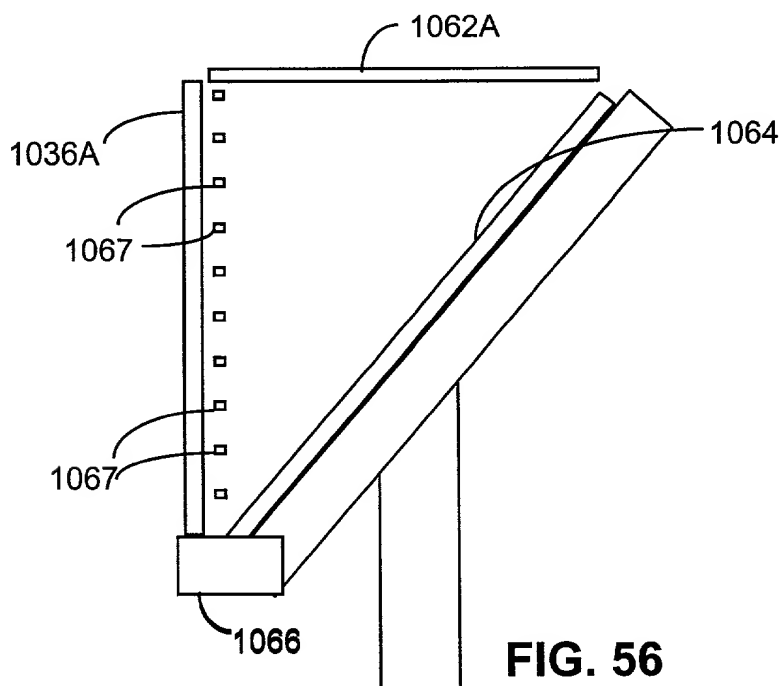
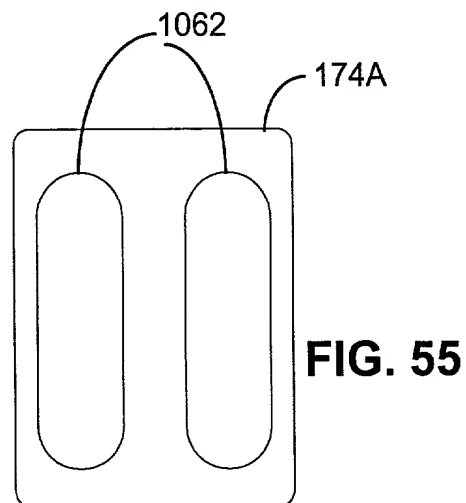
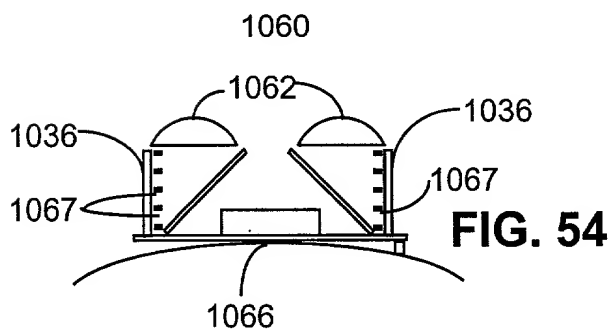
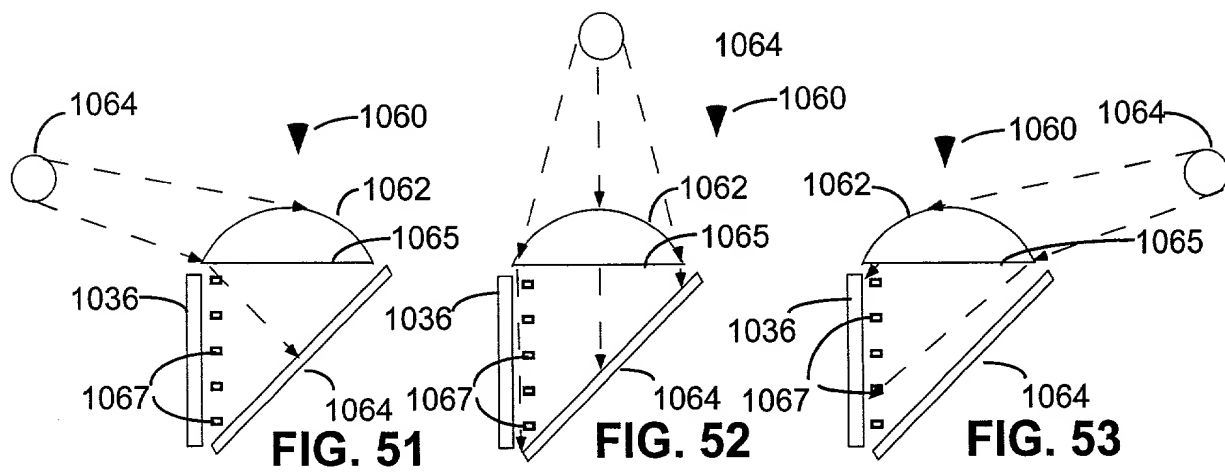


FIG. 50



-Paid-Driver Central System Programming~1070

- ...
- use successive locations and time through which display travels to calculate a value for the travel~1072
- credits calculated value to vehicle operator~1074
- transmit calculated value credited to the vehicle for display to driver~1076
- transmit information to driver showing different value associated with driving through different areas~1078
- when driver enters a destination for travel~1080
 - calculate one or more routes to the destination with a maximum combination of quickest route, most display earnings, and/or lowest cost~1082
 - communicate this calculated information to the driver~1084
- ...

FIG. 57

-Programming database~1124

- street location programming~1125
- time programming~1126
- weather programming~1128
- news programming~1130
- sports programming~1132
- traffic programming~1134
- public service announcements~1136
- contest programming~1138
- soap opera programming~1140
- greetings programming~1144
- ...

FIG. 58

--Central System's Public API To Display Units ~1220

- From Central System To display ~1222
 - displaySelectionMsgWithIDs(header, mobileUnitID, displayMsgIDString, <locationSignalPeriod>) ~1224
 - CachingMsg(header, mobileUnitID, displayMsgIDString, <locationSignalPeriod>) ~1226
 - locatorSignalPeriodMsg(header, mobileUnitID, locatorSignalPeriod) ~1228
 - ...
- From Display To Central System ~1230
 - locatorSignalMsg(Header, MobileUnitID, GPSCoords, Speed, currentSideMsgID, currentbackMsg, vehicleSpeed, displayUnitStatus, <missingDisplayMsg>, <intendedDestination>)~1232

FIG. 59

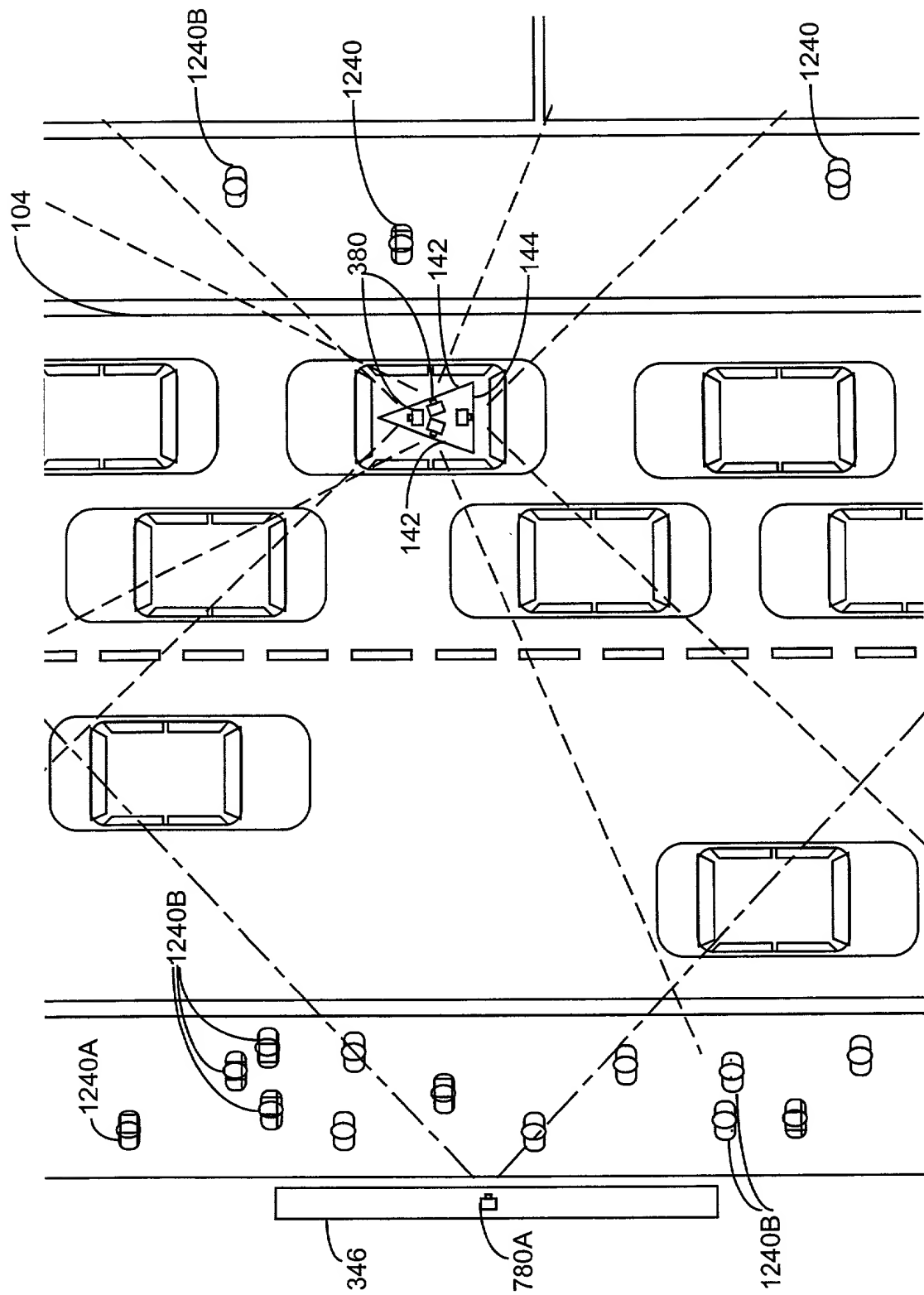


FIG. 60

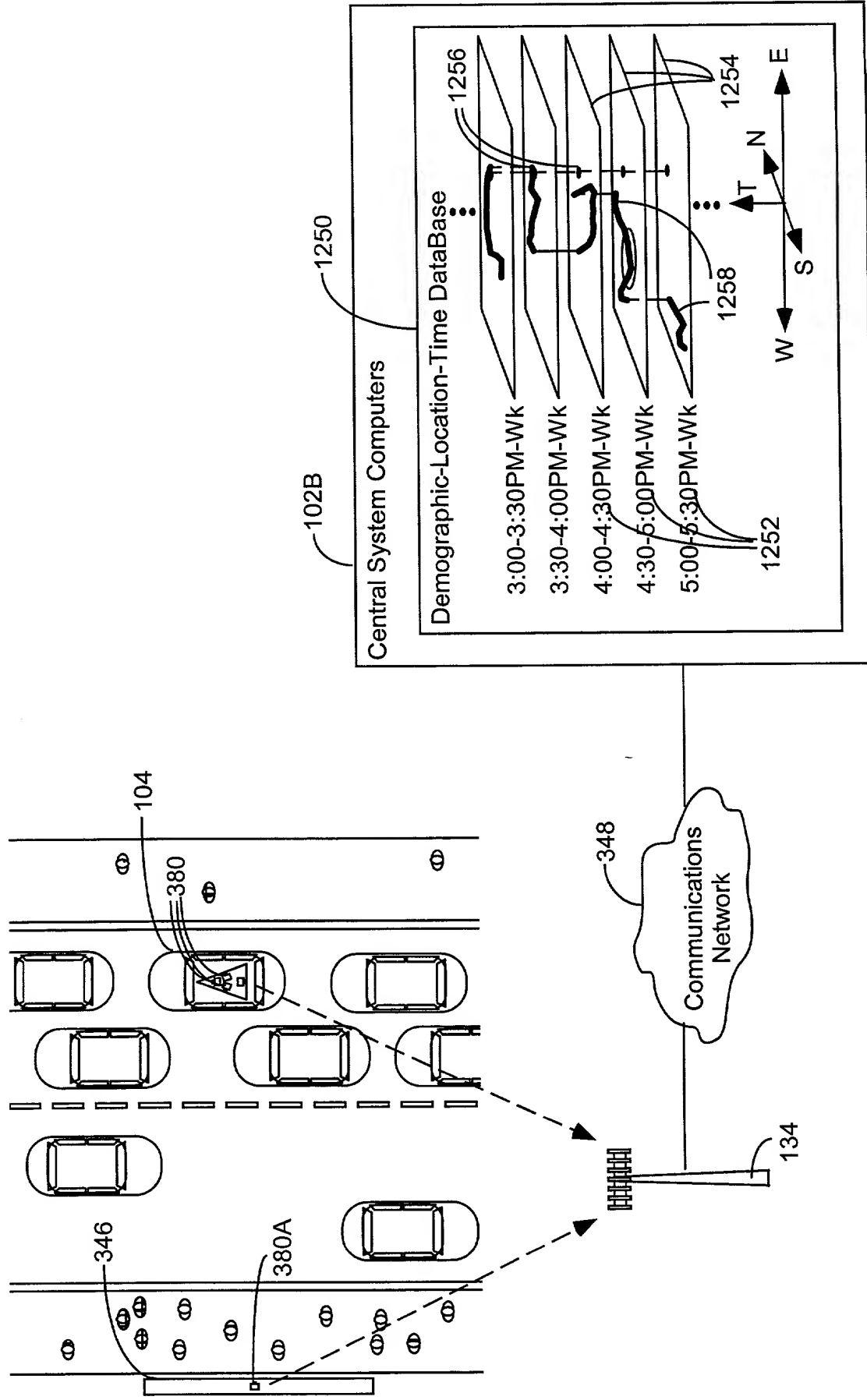


FIG. 61

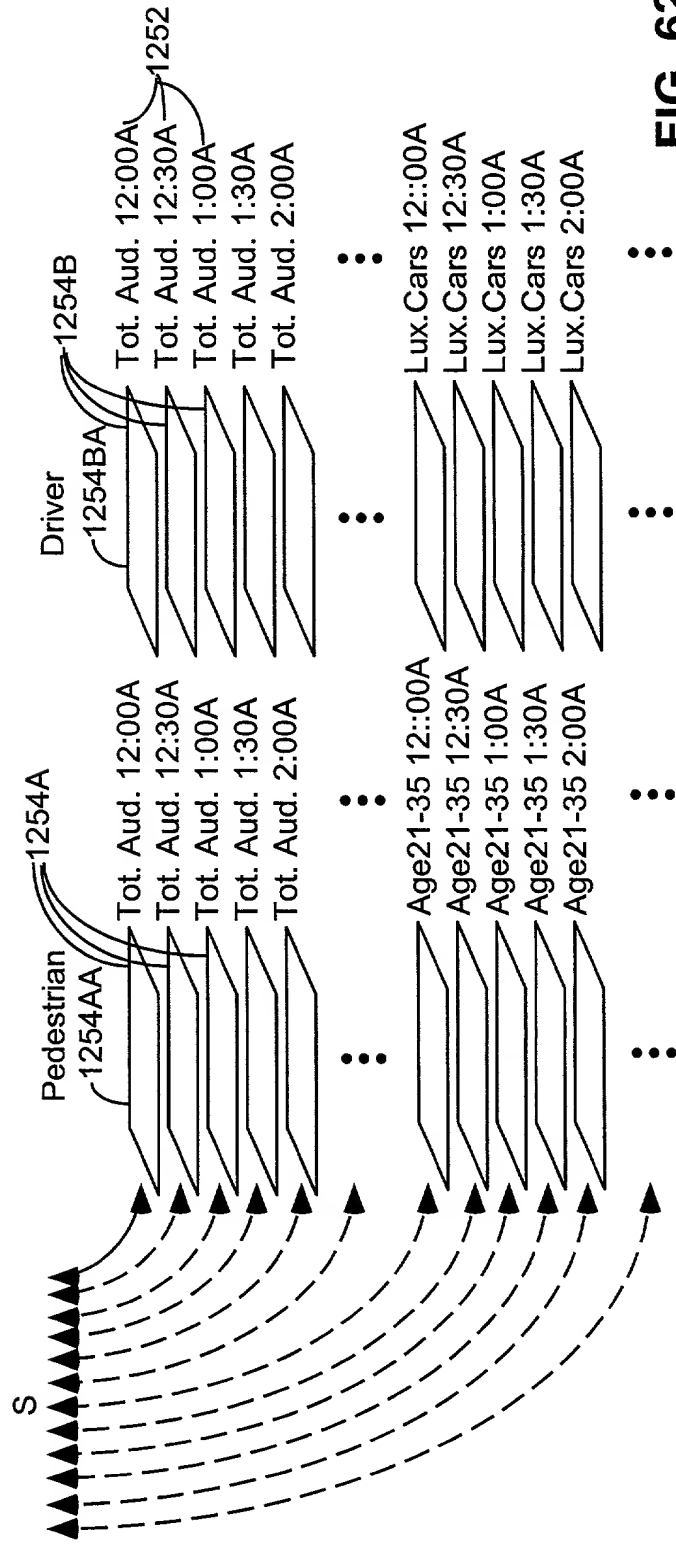
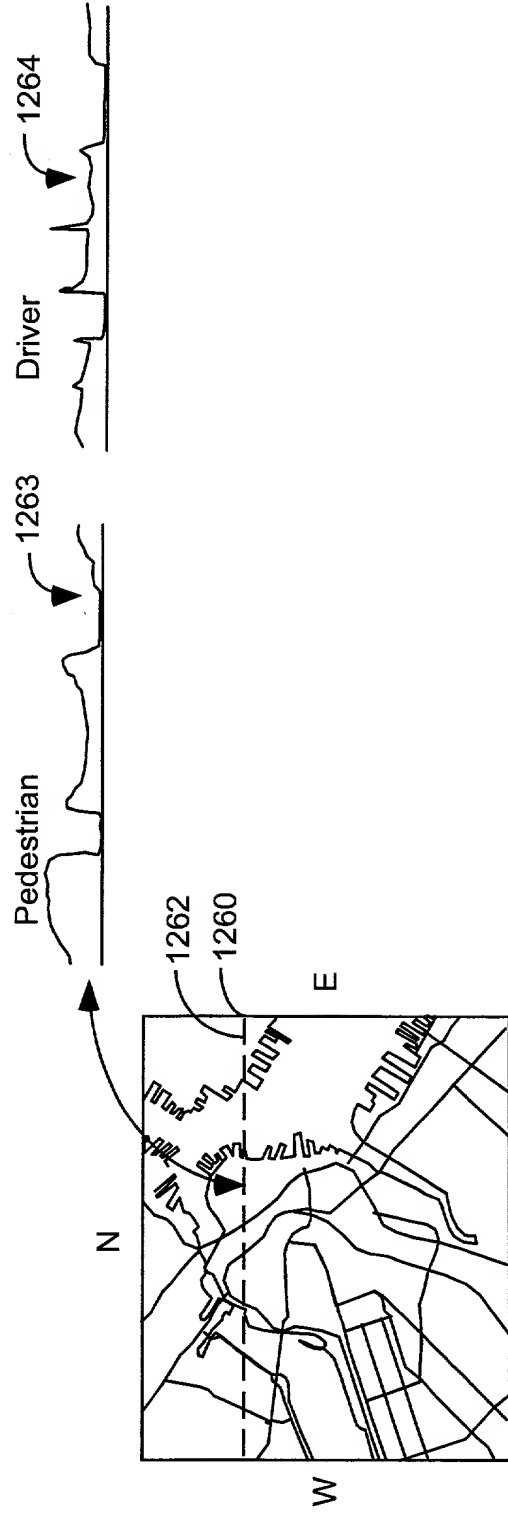
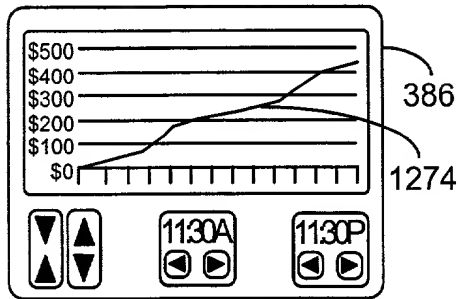
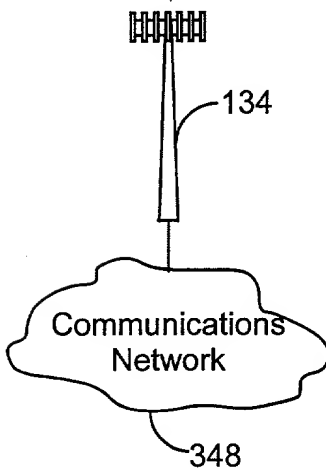
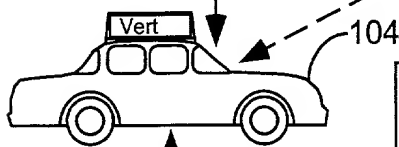
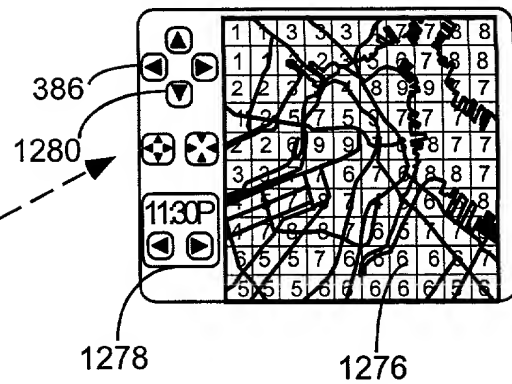


FIG. 62

Display Sum For Operator



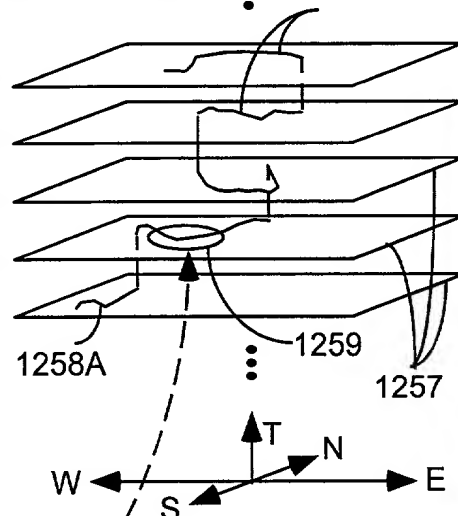
Display Values To Operator



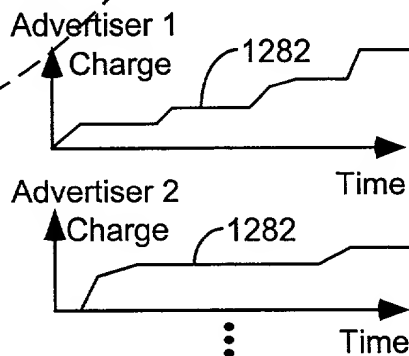
Central System Computers

Price-Location-Time DataBase

3:00-3:30PM
3:30-4:00PM
4:00-4:30PM
4:30-5:00PM
5:00-5:30PM



Billing Database



1	1	3	3	3	4	7	7
1	1	2	2	3	5	6	7
2	2	3	3	4	8	9	9
1	2	5	7	5	9	7	7
2	2	6	9	9	7	8	8
3	3	7	7	6	7	6	8
4	5	7	8	7	4	5	6
4	7	8	8	7	6	5	7

FIG. 63

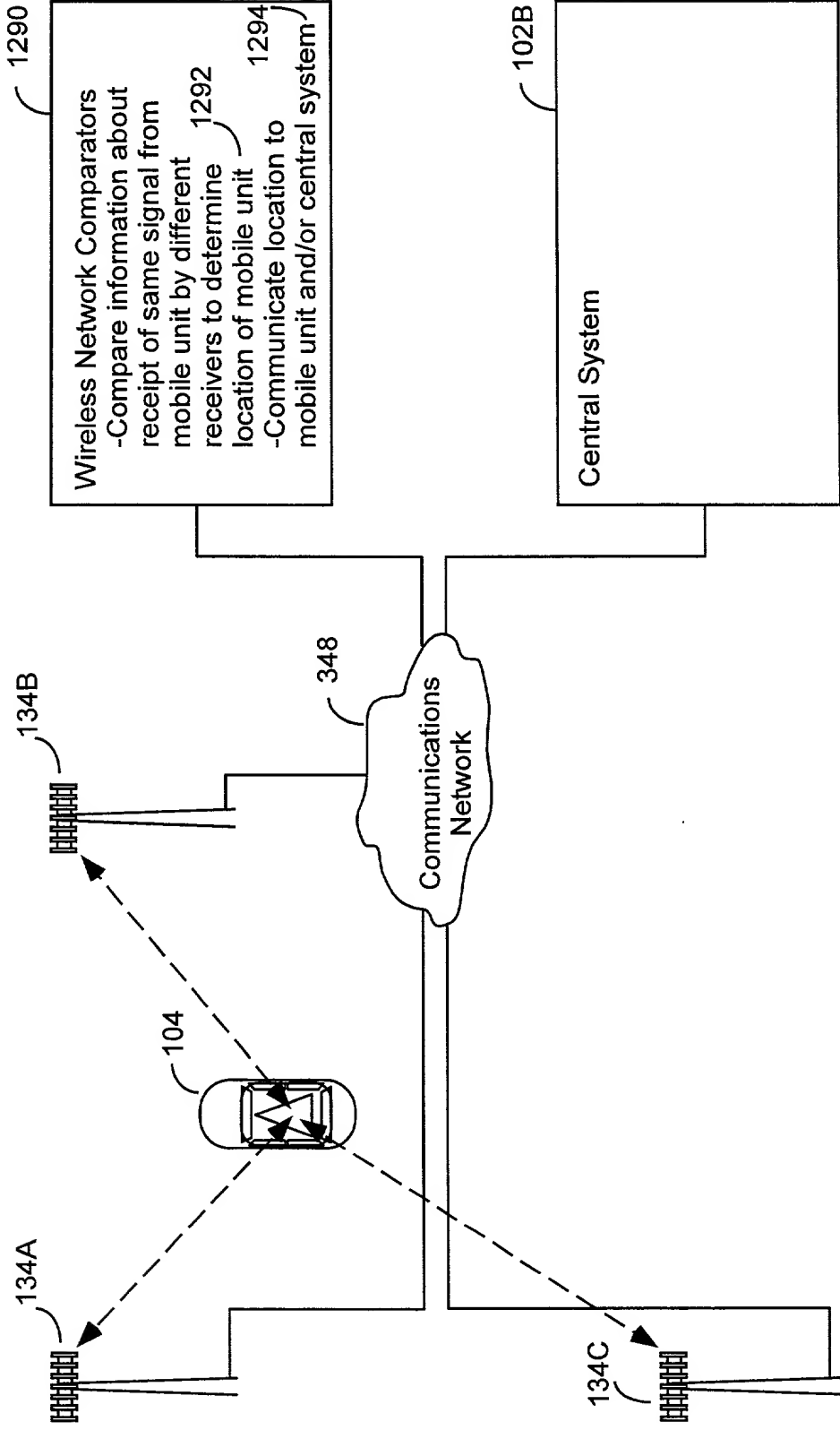


FIG. 64

-Central System Auto-Placement Programming~1300

-...

-provide user interface and receive from user information defining an auto-placement order, including~1302

-allowing user to specify for each of one or more viewer types~1304

-One or more characteristics of viewer type, including~1306

-...

-ethnic group~1308

-estimated income~1310

-life-style category~1312

-...

-current activity~1314

-driving~1316

-walking~1318

-sitting~1320

-...

-relationship to display~1322

-side display viewer~1324

-back display viewer~1326

-view duration~1328

-relative speed~1330

-proximity~1332

-orientation~1334

-...

-time classification ~1336

-location classification~1338

-Number of viewers of that type~1342

-select order's time frame~1343

-system indicates price of each viewer type given time frame~1344

-select one or more messages to be shown with order~1174

-select to commit to the current order~1347

-...

-receive shown-message information from each of plurality of display units~1348

-for each shown message record received~1350

-for each viewer type in order associated with shown message~1352

-use estimated number of viewers of that type to~1354

-determine number of exposures to viewers of that time still remaining in order~1356

-calculate urgency for viewers of that type for the given order as function of number of exposures to viewers of that type remaining and amount of time remaining~1358

-calculate charge for order to be billed to customer~1360

-...

-download to display units changes in viewer type urgency associated with different orders~1362

-...

FIG. 65

-Display Unit Auto-Placement Programming~1364

-...

-For each display (side or back) which is about to be free to show a new message~1366

-For each of plurality of orders~1368

-For each of viewer types in order~1370

-Calculated product of~1372

-estimated number of viewers of that type for display (side or back) from demographic data base for current place and time and/or from demographic data derived from real time sensors~1374

-order's price for each viewer of that type~1376

-order's urgency for each viewer of that type~1378

-add product to orderScore calculated for all of order's viewer types~1380

-select order with best orderScore~1382

-show message associated with selected order as soon as display is free to show new message~1384

-record the following shown-message information for each shown message~1386

-message number~1388

-order number~1390

-time and place of showing~1392

-for each of its viewer types~1394

-the estimated number of its viewers of that type~1396

-...

-upload shown message information to central system~1398

-...

FIG. 66

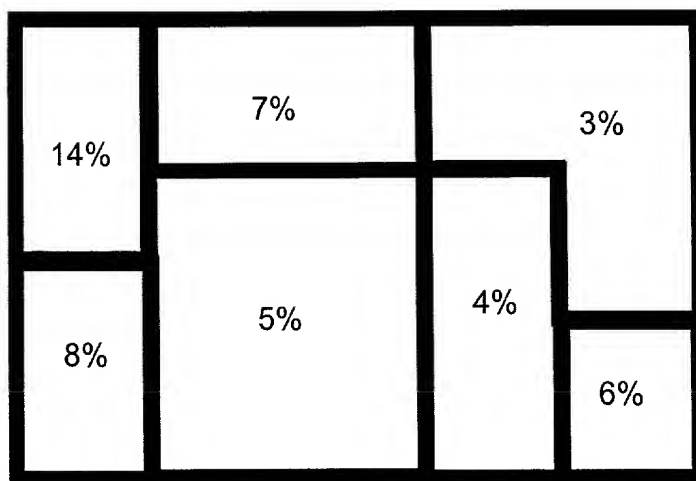


FIG. 67



FIG. 68